CLAIMS

1. A deinterleaving method for processing data, comprising sorting a sequence of data items from a first
5   order to a second order, **characterized** by the steps of:
      withdrawing at least a first data item having a first position from said sequence;
      determining a destination position for said withdrawn data item within said sequence;
10   determining whether said determined destination position contains any data item, if so replacing the data item of said determined destination position with the withdrawn data item, otherwise inserting the first data item at said determined destination position.
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2. The deinterleaving method according to claim 1, wherein the destination position is calculated based on the index of the first position and the number of data items of said sequence.
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3. The deinterleaving method according to claim 1 or 2, wherein two data items are repositioned in each sequence of steps.

25   4. The deinterleaving method according to any of the previous claims, wherein the method is an in-place method carried out within a memory (110) having a set of memory locations.

30   5. The method according to any of the previous claims, wherein said sequence comprises an even number of data items, and wherein the number of data items relating to a first set of data items of said sequence is equal to the number of data items relating to a second set of data
35   items of said sequence.

6. The deinterleaving method according to any of the previous claims, wherein data items relating to a first and a second set of data items, respectively, are arranged alternating in said sequence before sorted, and wherein the data items when sorted within said sequence are grouped into consecutive data items having consecutive positions.

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7. The deinterleaving method according to claim 5, wherein the two first data items to be repositioned in the same repositioning sequence are selected as one data item relating to each of the first and second sets of data items, and wherein said two first data items are selected as any other data items than the first and last data items of the sequence.

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8. The deinterleaving method according to claims 5 or 7, wherein the two first data items to be repositioned are selected as the data items stored at the center positions of said sequence.

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9. The deinterleaving method according to any of the previous claims, further comprising the steps of:

if the destination position contains no data item, determining at least one incorrectly positioned data item to reposition; and

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repositioning said at least one incorrectly positioned data item.

10. The deinterleaving method according to claim 9, wherein the position of the at least one incorrectly positioned data item to be repositioned is determined as:

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the position preceding a first destination position, which did not contain any data item; and/or

the position following a second destination position, which did not contain any data item.

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11. The deinterleaving method according to any of the previous claims, wherein the sequence is indexed from 0, and wherein the destination position of any incorrectly

5   positioned data item is:

the index of the first position divided by 2, if the index of the first position is even; or

the total number of memory locations divided by 2 and added to the index of the first position divided by 2, if

10   the index of the first position is odd.

12. A deinterleaving device (130) for sorting a sequence of data items from a first order to a second order, comprising a memory (110) having a set of memory

15   locations for storing the sequence of data items, and a processor (120) for sorting the data items, **characterized** by:

a buffer for storing at least a first data item at a first memory location;

20   said processor being adapted to withdraw said data item from said buffer, and to determine a destination memory location for said withdrawn data item, and to determine whether said determined destination memory location contains any data item, if so replacing the data

25   item of said determined destination memory location with the withdrawn data item, otherwise inserting the first data item at said determined destination memory location.

13. The deinterleaving device according to claim 12,

30   wherein the processor is adapted to calculate the destination position based on the index of the first position and the number of data items of said sequence.

14. The deinterleaving device according to claim 12 or 13, wherein the processor is adapted to reposition two data items in each repositioning sequence.

5   15. The deinterleaving device according to any of the claims 12 to 14, wherein the processor comprises a register file, and the repositioning of data items is done in-place in said memory (110).

10   16. The deinterleaving device according to any of the claims 12 to 15, wherein said memory (110) comprises an even number of memory locations.

17. The deinterleaving device according to claim 14, 15   wherein the processor (120) is adapted to select the two first data items to be repositioned in the same repositioning sequence as one data item relating to each of a first and a second set of data items, and select said two first data items as any other data item than the first and 20   the last data items of the sequence.

18. The deinterleaving device according to claim 16 or 17, wherein the processor (120) is adapted to select the two first data items to be repositioned as the data items 25   stored at the center memory locations of the memory (110).

19. The deinterleaving device according to any of the claims 12 to 18, further adapted to:
        if the destination memory location contains no data 30   item, determine whether all data items of said sequence are positioned at their correct memory location;
        if any data item is stored at an incorrect memory location, determine at least one incorrectly positioned data item to reposition; and

reposition said at least one incorrectly stored data
item.

20. The deinterleaving device according to claim 19,
5   wherein the memory location of the at least one incorrectly
stored data item to reposition is determined as:
        the memory location preceding a first destination
memory location, which did not contain any data item;
and/or
10   the memory location following a second destination
memory location, which did not contain any data item.

21. The deinterleaving device according to any of the
claims 12 to 20, wherein the memory locations are indexed
15 from 0, and wherein the index of the destination memory
location of any incorrectly positioned data item is
determined as:
        the index of said first memory location divided by 2,
if the index of said first memory location is even; or
20   the total number of memory locations divided by 2 and
added to the index of said first memory location divided by
2, if the index of said first memory location is odd.

22. An electronic apparatus (1) for rendering a
25 sequence of interleaved data items, comprising a
deinterleaving device (130) for sorting data items
according to any of the claims 12-20.

23. The apparatus according to claim 22, wherein the
30 apparatus (1) is a mobile radio terminal, a personal
digital assistant, a pager, a smartphone, communicator, an
electronic organizer, or a multimedia player for rendering
digital multimedia files.

24. The apparatus according to claim 22, wherein the apparatus is a mobile telephone (1).

5   25. A computer program product embodied on a computer readable medium (111), comprising computer readable instructions to carry out the method according to any of the claims 1-11 when run by an electronic device having digital computer processing capabilities.